

Abstract of the Disclosure

ADAPTIVE NOISE FILTERING AND EQUALIZATION FOR OPTIMAL HIGH SPEED MULTILEVEL SIGNAL DECODING

A Signal Conditioning Filter (SCF) and a Signal Integrity Unit (SIU) address the coupled problem of equalization and noise filtering in order to improve signal fidelity for decoding. Specifically, a received signal can be filtered in a manner to optimize the signal fidelity even in the presence of both significant (large magnitudes of) ISI and noise. The present invention can provide an adaptive method that continuously monitors a signal fidelity measure. Monitoring the fidelity of a multilevel signal can be performed by external means such as by the SIU. A received signal $y(t)$ can be “conditioned” by application of a filter with an electronically adjustable impulse response $g(t)$. A resulting output $z(t)$ can then be interrogated to characterize the quality of the conditioned signal. This fidelity measure $q(t)$ can be used to adjust the filter response to maximize the fidelity measure of the conditioned signal.